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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/734,801	12/12/00	CARLSSON R	ERICPOTTER

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DANN DORFMAN HERRELL & SKILLMAN
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EXAMINER	
CHUNDURU,S	
ART UNIT	**PAPER NUMBER**
1656	4

DATE MAILED: 06/29/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No.	Applicant(s)	
	09/734,801	CARLSSON ET AL.	
	Examiner	Art Unit	
	Suryaprabha Chunduru	1656	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 December 2000* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15) ☒ Notice of References Cited (PTO-892)
16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
18) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
19) ☐ Notice of Informal Patent Application (PTO-152)
20) ☐ Other:

DETAILED ACTION

1. Claims 1-6 are pending.

Claim Rejections - 35 USC § 112

2. Claim 1 is indefinite in the recitation of the term 'optionally'. It is unclear whether any of the limitations which follow the term optionally are required limitations, i.e. are the further step of 'adding primer sequences that anneal to the 3' and 5' ends of ...' .

Therefore, the metes and bounds of the claim are unclear.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-6 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-7 of U.S. Patent No.6,159,690 ('690). Although the conflicting claims 1-7 of the '690 patent are not identical, they are not patentably distinct from each other because claims 1-7 of the '690 patent are drawn to a method for generating a polynucleotide or population of sequences from parent polynucleotide sequences encoding one or more protein motifs, comprising the steps of (a) digesting the parent polynucleotide sequence which includes double-stranded or single-stranded parent polynucleotide sequences, with an

exonuclease to generate a population of fragments; (b) contacting said fragments with template polynucleotide sequence under annealing conditions; (c) amplifying the fragments that anneal to the template in step (b) to generate at least one polynucleotide sequence encoding one or more protein motifs having altered characteristics as compared to the one or more protein motifs encoded by said parent polynucleotide. Further '690 patent discloses that (a) BAL3 as exonuclease; (b) parent polynucleotide sequences are subjected to mutagnenesis(c) mutagenesis is error prone mutagenesis (error prone PCR). Claims 1-6 of the instant invention are drawn to the said method as disclosed by '690 patent. Thus the instant method of generating a polynucleotide sequence or population of sequences from parent single stranded polynucleotide sequences encoding one or more protein motifs is inherent in the teaching of the '690 patent as mentioned above. Therefore, the '690 patent meets the limitations of the instant claims 1-6.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 1-6 are rejected under 35 U.S.C. 102(e) as being anticipated by Borrebaeck et al. (6,159,690). Borrebaeck et al. disclose that the method for generating a polynucleotide or population of sequences from parent polynucleotide sequences encoding one or more protein motifs, comprises the steps of (a) digesting the parent polynucleotide sequence which includes double-stranded or single-stranded parent polynucleotide sequences, with an exonuclease to

generate a population of fragments; (b) contacting said fragments with template polynucleotide sequence under annealing conditions; (c) amplifying the fragments that anneal to the template in step (b) to generate at least one polynucleotide sequence encoding one or more protein motifs having altered characteristics as compared to the one or more protein motifs encoded by said parent polynucleotide. Further Borrebaeck et al. discloses that (a) BAL3 as exonuclease; (b) parent polynucleotide sequences are subjected to mutagnenesis(c) mutagenesis is error prone mutagenesis (error prone PCR). Claims 1-6 of the instant invention are drawn to the said method as disclosed by Borrebaeck et al. Thus the instant method of generating a polynucleotide sequence or population of sequences from parent single stranded polynucleotide sequences encoding one or more protein motifs is inherent in the teaching of Borrebaeck et al. as mentioned above. Therefore, the disclosure of Borrebaeck et al. meets the limitations of the instant claims 1-6.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stemmer et al. (USPN. 5,811,238) and in view of Berger (Analytical Biochemistry, 222: 1-8, 1994).

Stemmer et al. teach a method of generating a selected polynucleotide sequence or population of selected polynucleotide sequences possessing a desired phenotypic characteristic (e.g., encoded polypeptide) wherein Stemmer et al. discloses that the method comprises (a) providing a population of polynucleotides (parent) digested into random fragments of a disired size; (b) contacting said fragments generated by cleavage to annealing conditions and amplifying the fragments that anneal to each other with polymerase under conditions to form mutagenized double stranded polynucleotide (see column 5, lines 51-67). Further Stemmer et al. disclose that the method provides generation of enhanced protein and polynucleotides encoding the protein and the enhanced protein is produced by including the error prone or mutagenic or site-directed mutagenesis (see column 7, lines 16- 35). Stemmer et al. also disclose that the polynucleotide sequences can be digested with nuclease (see column 17, lines 30-35). However, Stemmer et al. did not teach the addition of primer sequences that anneal to the 3' and 5' end of at least one of the parent polynucleotides.

Berger teaches a method for site-specific mutagenesis wherein Berger discloses that the method comprises shuffling of normal and mutant DNA fragments to reassemble correctly (see page 5, paragraph 3). Further Berger discloses that addition of overlapping oligomers to larger fragments to both ends of polynucleotides and sequential polymerase chain reactions provides a full-length mutant fragment (see page 5, paragraph 3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the method of DNA shuffling as taught by Stemmer with the method of Berger which is applicable to achieve site-specific mutagenesis or the isolation of large intact DNA fragments because Stemmer states that 'the DNA shuffling method can be performed by adding to the reassembly mixture oligonucleotides any sequence mixture can be incorporated at any specific position into another sequence mixture. Thus it is contemplated that mixtures of synthetic oligonucleotides, PCR fragments or even whole genes can be mixed into another sequence library at defined positions'. One form of such progress, expressly motivated by Berger is the use of primers "to form the initial heterodimer with extra piece and downstream partner in a completely interchangeable fashion'. An ordinary practitioner would have been motivated to combine the method of Stemmer et al. with the addition of oligomers of Berger in order to achieve the expected advantage of generating polynucleotides having desired characteristics.

No claims are allowable.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Suryaprabha Chunduru whose telephone number is 703-305-1004. The examiner can normally be reached on 8.30A.M. - 4.30P.M, Mon - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Jones can be reached on 703-308-1152. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-0294 for regular communications and - for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0196.

Suryaprabha Chunduru
June 20, 2001

JEFFREY FREDMAN
PRIMARY EXAMINER